

# Interdisciplinarity in doctoral education

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**“Research for sustainable societies – the role of universities”**

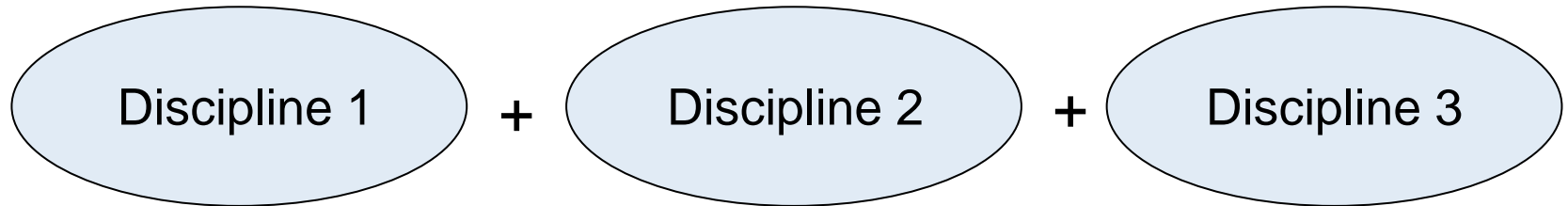
**Pre-conference Workshop: Lessons learned from collaborative doctoral education**

**Breakout Session 1: Good practices in managing and professionalising doctoral education**

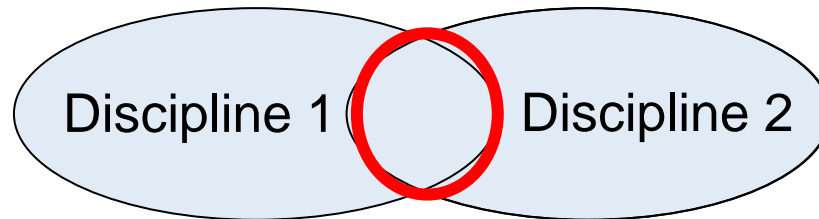
# Institutional background

- > **National Centre of Competence in Research (NCCR) North-South:** 12-year programme (2001-2013), managed at CDE:
    - Research for sustainable development: problem-based
    - Research agenda defined with partners in the South
    - Disciplinary, interdisciplinary, transdisciplinary research
    - Partnership actions involving scientists and society
    - (Academic) capacity building programme, Alumni network
- **Integrated Training Course**
  - **Now: the Summer School of the International Graduate School (IGS) North-South**
- 3 universities in Switzerland, partnerships with univ. in global South
  - Full membership and associate membership
  - IGS provides a Certificate for “Sustainable Development” added to the PhD Degree earned at home institution (subject to their own rules)
  - Summer School = 5 of 12 ECTS (9-12 days)
  - [www.igs-north-south.ch](http://www.igs-north-south.ch)

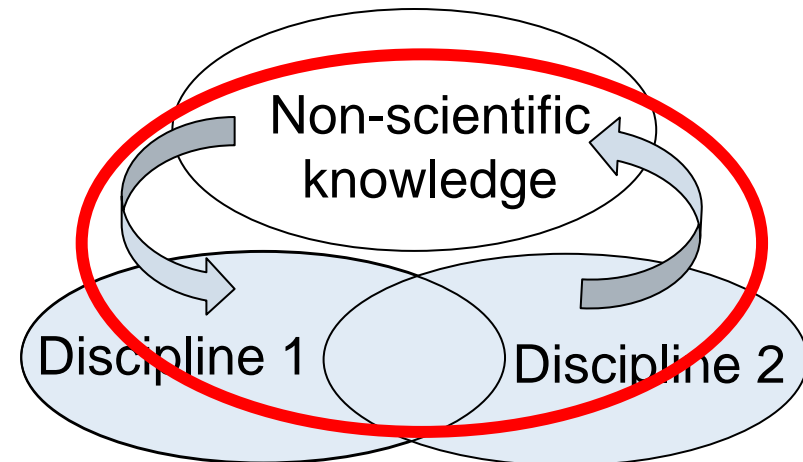
# Quick definitions



multidisciplinary, pluridisciplinary



interdisciplinarity



transdisciplinarity

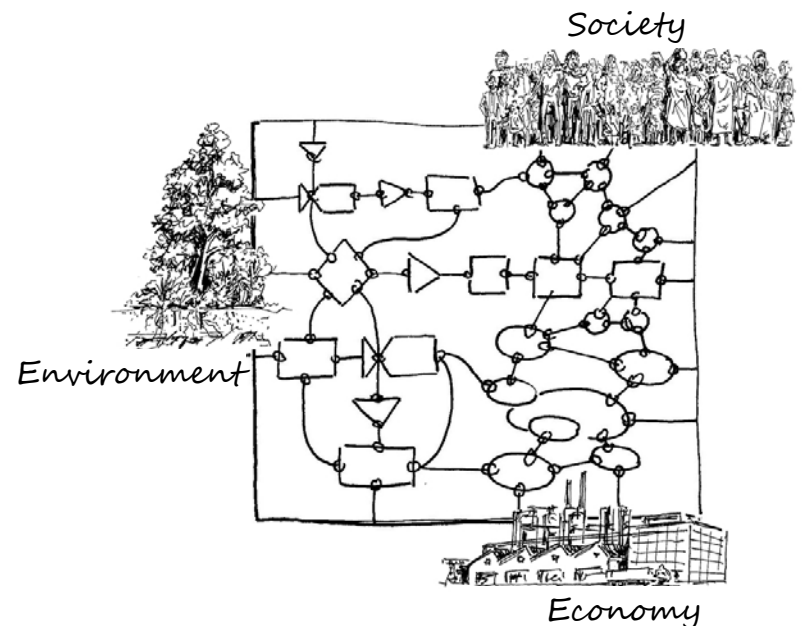
# What is needed for sustainable development?

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- > Knowledge!
- > That is why science is so important.
- > What scientific disciplines are represented here today?

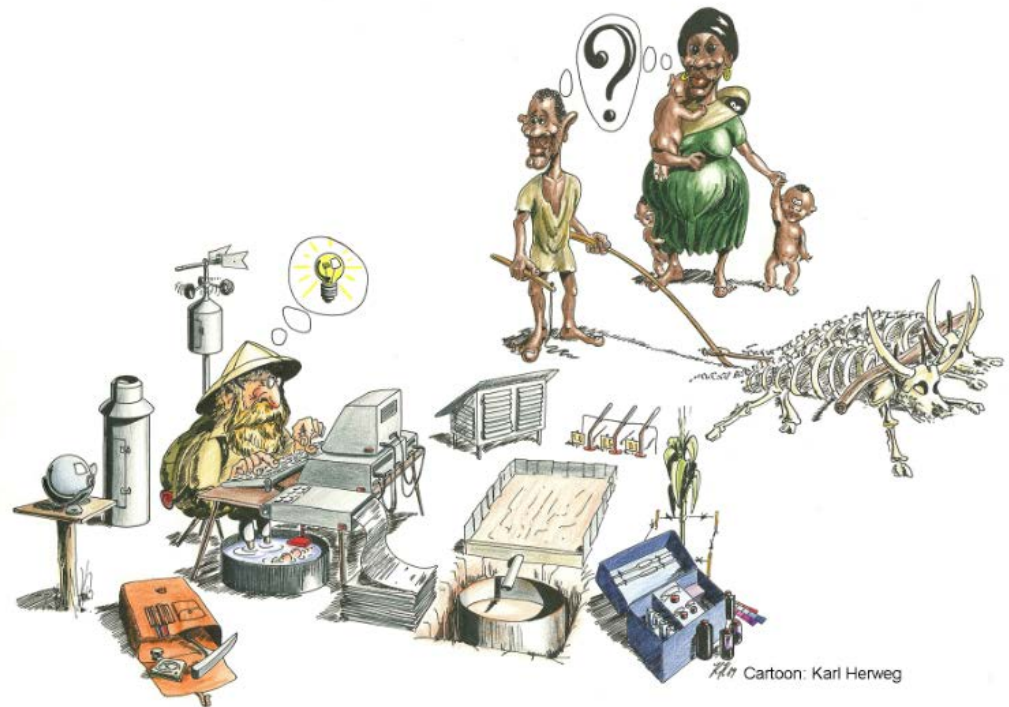
# Why is interdisciplinary research needed?

1. **Complexity** of problems of global change
  2. **Rapid transformation** and high degree of **uncertainty**
- > This requires a **systemic approach**
  - > One discipline cannot tackle this *alone* (e.g. “Green Revolution” in the 1960s: created new problems)



# Why is transdisciplinary research needed?

- > Sustainable development is a **vision** and a **goal**
- > It must be defined by the whole of society and not by science alone



- > This is a **normative process**: values need to be negotiated by science *and* society together (at different stages of research)

# So how do we go about this?

- > Your experience of working in your disciplines is probably like this:



- > Scientists are entrenched in their disciplines!

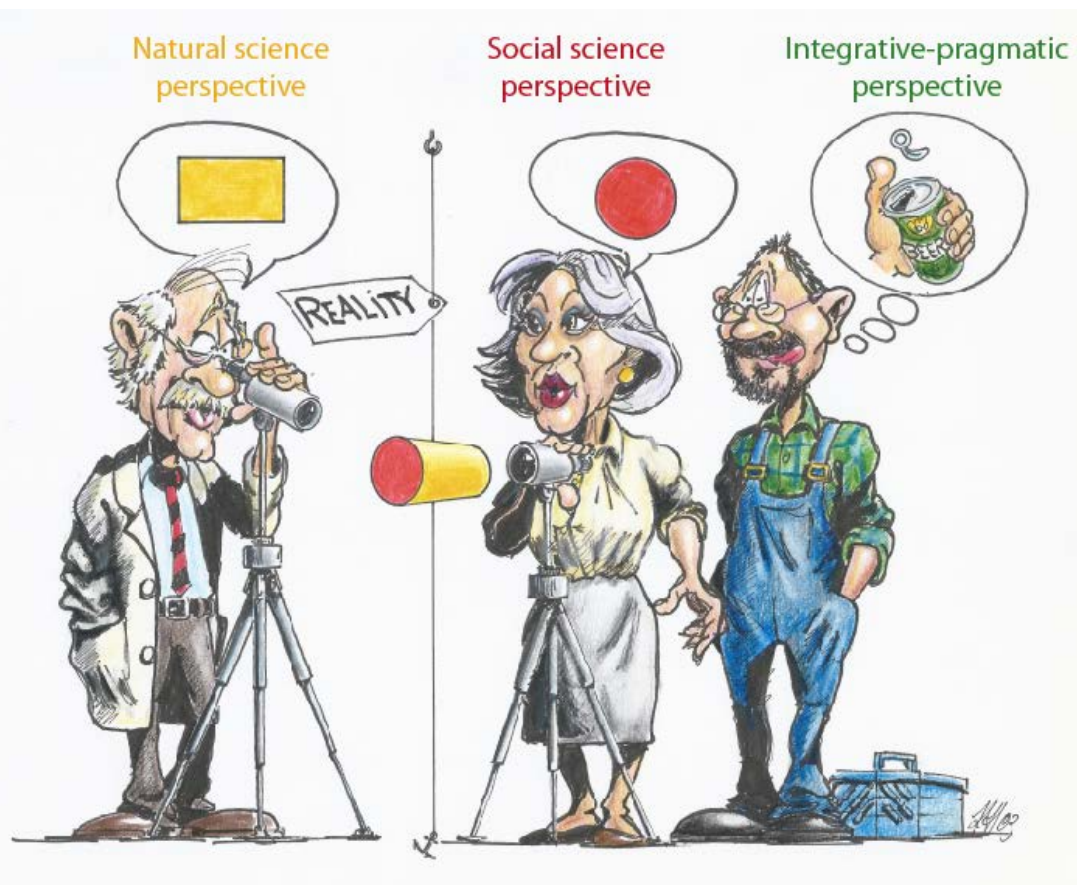
# Integrative training approach (Summer School programme)

## Steps

1. General introduction to global change and sustainable development
2. Individual students present one another their own understanding of science and methodological approach (**disciplinary encounters**)
3. Local experts present a local context and its problems (lectures)
4. Students work in groups: how can they conceptualize these problems together as a system? (**interdisciplinary task #1**)
5. Groups develop an approach for the field trip (what to observe? ask people? **interdisciplinary task #2**)
6. Fieldtrip (1-3 days): **transdisciplinary exercise**
7. Groups analyse what they saw, heard, thought, felt – and develop a common proposal for a research project (**interdisciplinary task #3**)
8. Groups present their projects, which are assessed and commented on



# What the interdisciplinary task #1 leads to



Students experience strong disagreement about how to conceptualize issues

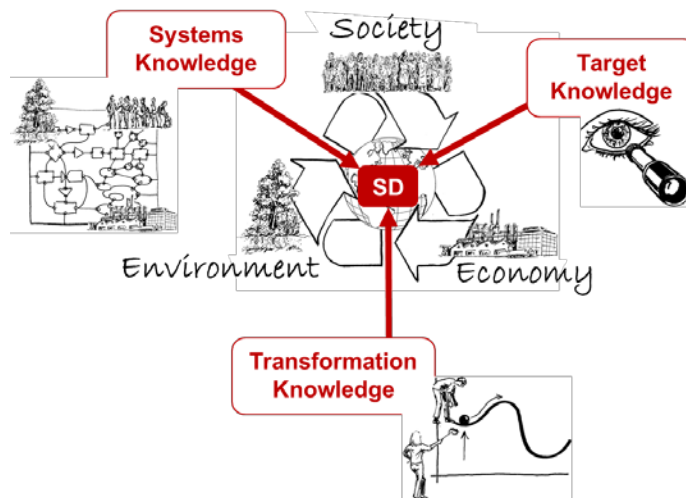
They need to abandon their “epistemological comfort zone” in order to understand the issues from the other disciplines’ perspectives

-> new concepts needed!

# Well-established frameworks can help!



Figure: UN SDG website



Graph: K Herweg

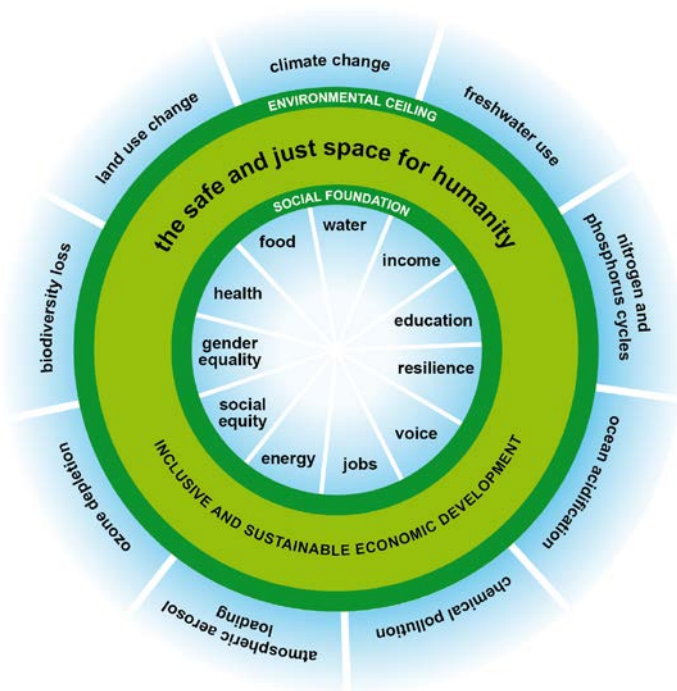


Figure: Raworth





## Inter- and transdisciplinary work



# Further information and references

International Graduate School (IGS) North-South (<http://www.igs-north-south.ch/Pages/default.aspx>)

CDE's integrative, case-study-based learning approach ([http://boris.unibe.ch/17593/1/Herweg-et-al\\_2012\\_Guidelines\\_Integrative\\_Training.pdf](http://boris.unibe.ch/17593/1/Herweg-et-al_2012_Guidelines_Integrative_Training.pdf))

CDE's Education for Sustainable Development Cluster  
([http://www.cde.unibe.ch/research/e4sd/projects/index\\_eng.html](http://www.cde.unibe.ch/research/e4sd/projects/index_eng.html))

The **University of Bern's** page for sustainable development:  
[http://www.unibe.ch/university/portrait/self\\_image/sustainability/index\\_eng.html](http://www.unibe.ch/university/portrait/self_image/sustainability/index_eng.html)

Contact: [sustainability@cde.unibe.ch](mailto:sustainability@cde.unibe.ch)

## REFERENCES TO CONCEPTUAL FRAMEWORKS:

Proclim/CASS. 1997. Visions by Swiss Researchers: Research on Sustainability and Global Change -- Visions in Science Policy by Swiss Researchers. Bern, Switzerland: Proclim.  
<https://naturalsciences.ch/service/publications/75640-visions-of-swiss-scientists>

Raworth K. 2012. *A Safe and Just Space for Humanity. Can We Live Within the Doughnut?* Cowley, Oxford: Oxfam. [www.oxfam.org/sites/www.oxfam.org/files/file\\_attachments/dp-a-safe-and-just-space-for-humanity-130212-en\\_5.pdf](http://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/dp-a-safe-and-just-space-for-humanity-130212-en_5.pdf);

UN [United Nations] General Assembly. 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*. New York: United Nations.  
<https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>